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Anticoagulation and atrial fibrillation

This factsheet is intended to provide patients affected by AF with information regarding the options for anticoagulation for AF-Related stroke risk reduction.

Introduction

Atrial fibrillation (AF) is a heart rhythm problem that makes the pulse irregular. This type of condition is called a 'cardiac arrhythmia'. AF is the most common cardiac arrhythmia. Although it can be identified in the young, it becomes more common with older age. It is thought that one in twelve people over 65 years has atrial fibrillation.

AF can cause palpitations, shortness of breath, chest discomfort, light-headedness, fainting or fatigue. Some patients have no symptoms with AF. It does not matter if the AF has symptoms or not the risk of AF-Related stroke remains significant.

There are two main goals in managing AF. The first is to reduce a person's risk of an AF-Related stroke. The second is to stop or reduce symptoms caused by the irregular heart rhythm.

AF-Related strokes

The heart's natural rhythm is controlled by a pacemaker called the sinus node in the upper chamber of the heart. This pacemaker triggers a smooth contraction of the heart. The contraction starts in the upper chamber (atrium) of the heart, forcing the blood smoothly into the lower pumping chamber (ventricle). While the ventricle is contracting, the upper chamber relaxes to allow the returning blood to be stored for a moment until the lower chamber is ready to receive it.

In AF the contractions of the upper chamber becomes disorganised and does not contract smoothly. The atria appear to shake like jelly. In this situation the blood flow reduces in some areas, especially in a side chamber of the left atrium called the 'left atrial appendage'. When the blood stops moving it will tend to form clots. When clots have formed in the atrium there is a chance that they will move into the blood flow and be carried in the circulation to smaller blood vessels of the brain. When an area of the brain has its blood supply blocked by a clot, this causes an ischaemic (clot caused) stroke. Most AF clot related illness occurs in the brain as stroke but can cause issues in other areas of the circulation.

Blood clotting

The complex process of blood clotting allows it to remain fluid normally, but to clot rapidly when needed. The process is often referred to as the 'clotting cascade' by clinicians. This term is used to explain how the stimulation to form a clot triggers a series of steps before producing the blood enzyme thrombin. This enzyme changes the soluble protein fibrinogen to the insoluble protein fibrin. Clots are made of fibrin.

A second clotting system is also active. This involves small cells found in the circulation called platelets. When platelets are triggered to heal a leak in the circulation they become tacky and stick together. As they stick together they trigger yet more platelets to become active and stick together. In this way they form a clot.

Preventing an AF-stroke

Several treatments are available which reduce the risk of an AF-stroke significantly. Mostly this is in the form of anticoagulation, sometimes called blood thinning.

There are now five commonly prescribed anticoagulants: the vitamin K antagonist warfarin, and the non-vitamin K antagonists dabigatran, rivaroxaban,apixaban and edoxaban. It is very important that you discuss with your clinician which option is most suitable for you. The NICE Patient Decision Aid on AF and Anticoagulation has been designed to help you and your doctor to discuss the options and decide on what is best for you. Reduce platelet stickiness: Medication can

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reduce the tendency for platelets to stick together and thereby prevent platelet clots. The main medications in this area are aspirin and clopidogrel.

Left atrial appendage: The side chamber of the left atrium is a common area for the blood flow to be reduced with a risk of clots forming. This area can be blocked off or in extreme cases removed to reduce the risk of clots forming here. This option is usually recommended to people who are unable to tolerate or are contraindicated for an anticoagulant.

AF-Related stroke and aspirin

In 2014, The National Institute for Health and Care Excellence (NICE) updated AF Guidelines and recommended that aspirin should not be used alone to reduce the risk of AF-Related stroke. The most effective option is an anticoagulant, but if there are reasons why this therapy cannot be used, then in a few cases, 'dual antiplatelet therapy' (aspirin and clopidogrel together) may be an option. Although, this will not reduce the risk of suffering an AF-stroke as effectively as an anticoagulant and the risk of suffering a bleed, because of these therapies, will be as great as when taking an anticoagulant.

Personal stroke risk

By looking at large groups of people with AF and seeing who develops strokes, we have been able to identify certain factors that increase the risk of stroke. From these we have developed the CHA2DS2-VASc scoring system (shown below).

Annual AF-stroke risk is under 2% at score 0 rising to over 10% for a score of 5 or 6. Most experts would suggest that the tipping point where the benefits of taking anticoagulation outweigh its risk is at a CHA2DS2-VASc score of 1 or above.

However, there are situations where your doctor may recommend that using anticoagulants may be of value despite what appears to be a low score (eg score of zero) using the above system. They will discuss this if it is the case.

AF Association factsheets which may be of help:
Apixaban / Dabigtran / Rivaroxaban / Warfarin therapy / Warfarin and diet / Warfarin and other medication / Aspirin and AF: FAQs

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Assess your personal risk score (CHA_2DS_2-VASc)

Question	Points	Your Score
Are you over 75?	2	
Are you over 65-74?	1	
Birth gender female?	1	
Do you have high blood pressure?	1	
Do you have Diabetes?	1	
Do you have heart failure?	1	
Do you have Angina, suffered a heart attack or have circulation problems including problems with the aorta*?	1	
Have you suffered a stroke (even a mild stroke)?	2	
Total	_	

*The aorta is the large blood vessel in the abdomen that can become 'dilated' or swollen forming what is called an 'aneurysm'.

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